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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,708	12/19/2001	Shunpei Yamazaki	740756-2412	2302

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EXAMINER

PAIK, SANG YEOP

ART UNIT

PAPER NUMBER

3742

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/021,708

Applicant(s)

YAMAZAKI, SHUNPEI

Examiner

Sang Y. Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-212 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-56, 62, 71, 80, 89, 98, 106, 107, 116, 125, 134, 143, 152, 161, 170, 179, 188, 197 and 201-212 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims withdrawn from consideration are 57-61,63-70,72-79,81-88,90-97,99-106,108-115,117-133,135-142,144-151,153-160,162-169,171-178,180-187,189-196 and 198-200.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 25, 26, 33, 34, 41, 42, 49 and 50 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishitani et al (US 6,414,280).

Nishitani shows the method claimed including the steps of heating a substrate for deposition of a semiconductor film in a reaction tube with a light lamp source such as a halogen lamp wherein the intensity of the light is changed due to the switching on and off of the light source, the light source in a first stage allows the source to be switched on within a cycle of one second or shorter since switching on of the light source is an instant action wherein the light source is then further controlled, in a second stage, by changing of the amount of heat or the time

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duration applied to the heating source to further provide a desired temperature during a cycle of one second or longer.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 27, 28, 43, 44, 71, 134, 143, 201, 203, 205, 207 and 210 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishitani et al (US 6,414,280) in view of Granneman et al (US 6,461,439) or Johnsgard et al (US 6,399,921).

Nishitani shows the method claimed except supplying a heated gas into the reaction tube.

Granneman and Johnsgard show that it is known in the art to provide a heated or conductive gas into the reaction tube to enhance the thermal transfer within the tube for heating the substrate. Furthermore, Granneman shows a reduced pressure in the reaction tube and Johnsgard shows a cooled gas introduced in the reaction tube to cool down the heated substrate.

In view of Granneman and Johnsgard, it would have been obvious to one of ordinary skill in the art to adapt Nishitani with the heated gas and reduced pressure to further enhance the thermal heat transfer from the light source to the substrate and further adapt with a cooling gas to cool down the heated substrate.

With respect to claims 71, 134 and 143, it is well known in the art that the wafer substrates shown in Nishitani are used for making computer chips and since such chips are

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notoriously known in the art of making personal computers, it would have been obvious to one of ordinary skill in the art that to use the method of processing the wafer substrates of Nishitani for making the semiconductor devices such as the personal computers.

With respect to claims 210, it is also well known in the art that the wafer substrates are made of quartz or glass, and it would have been obvious to one of ordinary skill in the art to provide the substrate made of glass as the wafer substrates since such is notoriously well known in the art.

5. Claims 29, 30, 45, 46, 51, 52, 62, 80, 98, 152, 170, 179, 209 and 211 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishitani et al (US 6,414,280) in view of Elliott (US 5,006,695).

Nishitani shows the method claimed except the first stage and second stage having the respective a first and second plurality of pulse forms.

Elliott shows a heating system wherein a heating element in a first stage has a plurality of pulse forms that turns the heating on and off in a high ratio, and as the heating element reaches the desired heating temperature in a second stage, the ratio of the on and off time is decreased.

In view of Elliott, it would have been obvious to one of ordinary skill in the art to adapt Nishitani with the plurality of pulse forms in the respective first and second stages having the recited time range to quickly achieve the desired heating temperature in the first stage and as such temperature is achieved, the on and off timing is decreased to maintain the desired heating temperature without overheating.

With respect to claims 62, 80, 98, 152, 170 and 179, it is well known in the art that the wafer substrates shown in Nishitani are used for making computer chips and since such chips are

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notoriously known in the art of making personal computers, it would have been obvious to one of ordinary skill in the art that to use the method of processing the wafer substrates of Nishitani for making the semiconductor devices such as the personal computers.

With respect to claims 209 and 211, it is also well known in the art that the wafer substrates are made of quartz or glass, and it would have been obvious to one of ordinary skill in the art to provide the substrate made of glass as the wafer substrates since such is notoriously well known in the art.

6. Claims 31, 32, 35-40, 47, 48, 53-56, 89, 107, 116, 125, 161, 188, 197, 202, 206 and 212 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishitani in view of Granneman or Johnsgard as applied to claims 27, 28, 43, 44, 71, 134, 143, 201, 203, 205, 207 and 210 above, and further in view of Elliott (US 5,006,695).

Nishitani in view of Granneman or Johnsgard except the first stage and second stage having the respective a first and second plurality of pulse forms.

Elliott shows a heating system wherein a heating element in a first stage has a plurality of pulse forms that turns the heating on and off in a high ratio, and as the heating element reaches the desired heating temperature in a second stage, the ratio of the on and off time is decreased.

In view of Elliott, it would have been obvious to one of ordinary skill in the art to adapt Nishitani, as modified by Granneman or Johnsgard, with the plurality of pulse forms in the respective first and second stages having the recited time range to quickly achieve the desired heating temperature in the first stage and as such temperature is achieved, the on and off timing is decreased to maintain the desired heating temperature without overheating.

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With respect to claims 89, 107, 116, 125, 161, 188 and 197, it is well known in the art that the wafer substrates shown in Nishitani are used for making computer chips and since such chips are notoriously known in the art of making personal computers, it would have been obvious to one of ordinary skill in the art that to use the method of processing the wafer substrates of Nishitani for making the semiconductor devices such as the personal computers.

With respect to claim 202, Granneman shows a reduced pressure in the reaction tube and Johnsgard shows a cooled gas introduced in the reaction tube to cool down the heated substrate.

With respect to claim 212, it is also well known in the art that the wafer substrates are made of quartz or glass, and it would have been obvious to one of ordinary skill in the art to provide the substrate made of glass as the wafer substrates since such is notoriously well known in the art.

7. Claims 204 and 208 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishitani in view of Elliott as applied to claims 29, 30, 45, 46, 51, 52, 62, 80, 98, 152, 170, 179, 209 and 211 above, and further in view Granneman et al (US 6,461,439) and Johnsgard et al (US 6,399,921).

Nishitani in view of Elliott shows the method claimed except providing a cooling gas.

Granneman and Johnsgard show that it is known in the art to provide a heated or conductive gas into the reaction tube to enhance the thermal transfer within the tube for heating the substrate. Furthermore, Granneman shows a reduced pressure in the reaction tube and Johnsgard shows a cooled gas introduced in the reaction tube to cool down the heated substrate.

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In view of Granneman and Johnsgard, it would have been obvious to one of ordinary skill in the art to adapt Nishitani with the heated gas and reduced pressure to further enhance the thermal heat transfer from the light source to the substrate and further adapt with a cooling gas to cool down the heated substrate.

With respect to claims 204, it is also well known in the art that the wafer substrates are made of quartz or glass, and it would have been obvious to one of ordinary skill in the art to provide the substrate made of glass as the wafer substrates since such is notoriously well known in the art.

Response to Arguments

8. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

With respect to Nishitani, the applicant argues Nishitani does not disclose the recited features of a plurality of pulse forms, each having a pulse form of a cycle of one second or longer and a switching of on and off of the lamp. This is not deemed persuasive since Nishitani shows the on and off of the switch wherein the lamp is also stayed on longer than one second after the initial stage of the off and on stage.

With respect to the plurality of the first and second pulse forms in the respective first and second stages, a new prior art is applied which renders the applicant's arguments moot.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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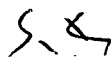
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y. Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Sang Y Paik
Primary Examiner
Art Unit 3742

syp